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ANALYSIS *of* TURF ASHES. *By* LORD TULLAMORE M.R.I.A. *Communicated in a Letter to the Rev. Doctor* ELRINGTON.

MY DEAR SIR,

GIVE me leave to ſubmit to you ſome experiments I happened to make in the courſe of laſt ſummer, during my reſidence at Charleville Foreſt. Read, Nov. 23d, 1799.

I AM tempted to communicate them, becauſe their reſult to me appears ſomewhat curious, though very different from what I wiſhed or expected; and I leave it to your better judgment to decide whether ſuch puny efforts are worthy even for a moment, the conſideration of the Royal Iriſh Academy.

WHILE Bogs predominate ſo generally though this iſland, they muſt attract univerſal attention, at leaſt in an agricultural point of view; and every ſucceſsful effort towards reſtoring them to a ſtate of fertility is of great national importance.

MY

My little experience inclines me to think, that one of the moſt advantageous, if not indiſpenſable preliminary ſtep in reclaiming bog, is ſubmitting it to the proceſs of burning, in a manner not very different from the common practice; by which, if I am not miſtaken, a greater quantity of aſhes may in moſt caſes be with eaſe procured from a given ſpace, than is eſſentially neceſſary to its future fertilization.

It were a very deſirable point gained, could we appropriate their ſuperfluity to any uſeful purpoſe, conſidering the inexhauſtible ſource it would afford, and the double advantage of its operation; and I might have eſteemed myſelf fortunate, had I been able to obtain from it, an article we have hitherto ſought from abroad although of prime neceſſity to our moſt flouriſhing manufactures.

We are taught by the obſervations of moſt experimental chemiſts, that aſhes of all vegetables afford more or leſs Potash: and conſidering bog or peat as now univerſally allowed of vegetable origin, I was led by analogy to ſuppoſe, that, after it had undergone a ſimilar proceſs of incineration, a ſimilarity of product, though proportionally ſmall, might be the reſult.

With a view ſolely to prove how far ſuch reaſoning was founded, I had a quantity of turf, free from wood or any other combuſtible materials whatſoever, burned under my immediate inſpection. When I had procured ſufficient aſhes, and ſifted them, I poured on boiling water, thus by lixiviation to extract any ſaline matter from the earthy or leſs ſoluble parts. I ſuffered this mixture, repeatedly ſtirred, to ſubſide for about twelve hours and the clear liquor decanted off, which had already a brackiſh taſte, was ſoon evaporated down to a ſtrong ſaline brine.

In order to ſeparate the cryſtallizable ſalts from the *potaſh*, which under ſuch circumſtances would not cryſtallize but remain in ſolution in the mother liquor, I ſet this brine to cool; and, on examining it the following day, found an abundant crop of beautiful cryſtals, ſhot out to a conſiderable ſize, a few of which I have preſerved for your inſpection.

The remaining liquor when evaporated to dryneſs afforded a ſaline maſs in conſiderable quantity, which, from its ſtrong effect on vegetable blues, I ſtill hoped might contain ſome of the deſired *alkali*; but on ſubmitting it to the examination of my ingenious and learned friend Mr. Higgins, he could not detect a particle of any kind of diſengaged *alkali*, though he ſought it by ſome of the niceſt teſts of modern chemiſtry. I therefore think we are founded in concluding, that nearly the whole maſs of ſalts thus procured muſt conſiſt of *ſulphat* of *ſoda* with little or no intermixture.

I confess, my dear Sir, that regarding this reſult in a philoſophical, but particularly in a geological point of view, it appears to me not a little ſingular, that *marine alkali* combined with *ſulphuric acid* ſhould be found in ſuch abundance in turf aſhes procured at a great diſtance from the ſea; but my admiration encreaſes when I alſo take into conſideration the very great ſolubility of this compound; and (if we allow the exiſtence of ſalts in vegetable matter previous to combuſtion) the length of time it muſt have remained without being operated on, in a ſubſtance eternally pervaded by water.

THAT ſuch a ſalt may be thus procured has not, to my very limited knowledge, hitherto been noticed by any writer. Doctor Darwin mentions the aſhes of peat, and denies indeed their containing alkali; and Mr. Jameſon, who gives an analyſis of *unburned* peat, did not produce *ſulphat* of *ſoda*, though he obtained *ſulphat* of *magneſia*, of which ſome ſuppoſe the former a modification.

I DID intend to have purſued the inveſtigation of this ſubject at future leiſure, but am very happy to find it is already in much abler hands; I have therefore only to entreat your indulgence for treſpaſſing thus far on your time, and to aſſure you that I am,

My dear Sir,
Your faithful humble ſervant,
TULLAMORE.

Blackrock, October 16th, 1799.

P. S. I was induced, ſince I wrote the above, to try the aſhes of a different though neigbouring bog which were of a deep *red*

red colour, whereas thoſe I had at firſt uſed were *white*. The reſult varied; as the red aſhes produced the *muriate* of ſoda only, but in much ſmaller quantity than I had before procured of *ſulphat* of ſoda from the *white* aſhes, which was about one ſixty-fourth of the original weight. This appeared to me rather intereſting, as it may in ſome degree account for the higher efficacy of *red* aſhes as a *manure*. I alſo find that *ſulphat* of ſoda has been already detected in turf aſhes. Vide Mem. Bruſſels. Vol. III.